I CLAIM:

1. A communication bridge having a serial interface to provide a serial communication link, when connected to the serial interface of a second communication bride, between a first device layer such as an asynchronous transfer mode (ATM) layer and a second device layer such as a physical (PHY) layer; the communication bridge further includes a programmable device interface capable of being connected according to an established protocol to the first device layer when programmed for a first mode of operation; when in the first mode of operation the communication bridge is transparent to the first device layer and programed to represents the second device layer to the first device layer; and when programmed for a second mode of operation the communication bridge is capable of being connected according to the established protocol to the second device layer, in the second mode of operation the communication bridge is transparent to the second device layer and represents the first device layer.

2. The communication bridge of claim 1, when in the second mode of operation includes a means for communicating with a plurality of second device layers.

3. The communication bridge of claim 1, further includes a down bridge direction and an up bridge direction and in the down bridge direction, the communication bridges includes an assembler means for converting an established protocol cell to a transport container for transmitting over the serial communication link.

4. The communication bridge according to claim 3, including a means for detection of back pressure code operatively connected to the assembler means and the assembler means includes a means for embedding the back pressure detection into the transport container.

5. The communication bridge according to claim 3, comprising a means for generating an error code on at least a first portion of the transport container code operatively connected to the assembler means and the assembler means assembles the error code into the transport container.

6. The communication bridge according to claim 3, comprising a means for generating an alarm and signal code operatively connected to the assembler means and the assembler means includes a means for embedding the alarm and signaling code into the transport container.

7. The communication bridge according to claim 3, wherein the communication bridge includes a parity generator and checker for generating a parity code, the parity generator and checker being operatively connected to the serial communication link and to the assembler means and the assembler means includes a means for embedding the parity code into the at the transport container.

8. The communication bridge of claim 1, wherein the communication bridge includes a down bridge direction and an up bridge direction and wherein the communication bridge in the up bridge direction includes a disassembler means for converting a transport container to the established protocol cell for transmitting over the established protocol interface.

9. The communication bridge according to claim 8, wherein the transport container includes an embedded back pressure indication and the disassembler means includes a means for extracting the back pressure indication.

10. The communication bridge according to claim 8, wherein the transport container further includes an error code and the communication bridge includes a means for checking the error code.

11. The communication bridge according to claim 8, wherein the transport container further includes an embedded alarm and signal code and the disassembler means includes a means for extracting the embedded alarm and signal code from the transport container.

12. The communication bridge according to claim 8, wherein the transport container further includes an embedded parity code and the disassembler means includes a means for extracting the embedded parity code.

13. A communication bridge comprising: an established protocol interface and the communication bridge further comprises; a means for programing the established protocol interface to first mode of operation and a second mode of operation, the established protocol interface includes a means for transferring established protocol cells between the communication bridge and the first device layers when in the first mode of operation and for transferring the established protocol cells between the communication bridge and the second device layers when in the second mode of operation;

a serial interface;

a down bridge direction and an up bridge direction and in the down bridge direction the communication bridge includes;

a means for converting the established protocol cell to a transport container, the means being operatively connected to the established protocol interface; and

a means for applying the transport container to the serial interface, the means for applying being operatively connected to the means for converting and to the serial interface.

14. The communication bridge according to claim 13, wherein the means for applying includes a means for arranging a predefined number of transport containers into a fame.

15. The communication bridge according to claim 14, further comprising; a means for generating an error code of at least a first portion of each transport container; and the means for converting includes an assembly means for assembling the error code into the transport container having the first portion on which the error code was generated.

16. The communication bridge according to claim 15, further including means for marking a predetermined transport container of the frame by modifying the error code assembled in the predetermined transport container.

17. The communication bridge according to claim 14, further including a means for generating a parity code on the frame; and an assembly means for embedding the parity code into a predefined transport container.

18. The communication bridge according to claim 17, wherein each transport container includes at least one control byte and the communication bridge comprises a means for embedding the parity code into the control byte.

19. The communication bridge according to claim 13, wherein the means for applying includes a means arranging a plurality of transport containers into a frame of N blocks wherein N is a positive number with each block including M transport containers where M is a positive number and each transport container includes at least one control byte, the means for applying includes a means for sequentially applying a first transport container of a first block through a last transport container of a last block to the serial interface.

20. The communication bridge according to claim 19, wherein each transport container includes a plurality of bytes and each byte includes a plurality of bits and the communication bridge further comprises a means for generating a bit interleave parity code over Q transport containers of a group of N/P blocks where Q is a positive number less than M and P is a positive number.

21. The communication bridge according to claim 20, wherein P is equal to 1 and the communication bridge includes a means for embedding the bit interleave parity into the at least one control byte of the of the last transport container of the last block.

22. The communication bridge according to claim 20, wherein P is greater than 1, and N/P equal to P equal sections of blocks and the communication bridge includes a means for embedding the generated bit interleave parity into the at least one control byte of the of a last transport container of a first section of blocks.

23. The communication bridge according to claim 20, further includes a means for embedding communication information into at least one control byte in a predefined transport container of each block.

24. The communication bridge according to claim 23, wherein the embedded communication information comprises alarm information.

25. The communication bridge according to claim 24, wherein the embedded communication information a parity code.

26. The communication bridge according to claim 24, wherein the communication comprises a back pressure information.

27. The communication bridge according to claim 24, wherein each block represents a sub-port with each sub-port being capable of connecting to a plurality of ports and each of one of a plurality of bits in the at least one control byte being used to identify a port with back pressure, the communication bridge comprises a means for setting a first logic state in a bit identifying the port with back pressure.

28. A communication bridge comprising: an established protocol interface and the communication bridge further comprises; a means for programing the established protocol interface to first mode of operation and a second mode of operation, the established protocol interface includes a means for transferring established protocol cells between the communication bridge and the first device layers when in the first mode of operation and for transferring the established protocol cells between the communication bridge and the second device layers when in the second mode of operation;

a serial interface;

a down bridge direction and an up bridge direction and in the up bridge direction the communication bridge includes;

a means for receiving a frame of a plurality of transport containers, including a means for checking each transport container for an error code and a means for marking a preselected transport container of the frame;

a means for converting each transport container to the established protocol cell, the means being operatively connected to the established protocol interface and to the means for receiving; and

a means for applying the established protocol cell to the established protocol interface, the means for applying being operatively connected to the means for converting and to the established protocol interface.

29. The communication bridge according to claim 28, wherein the transport container includes a header, and a payload field and at least one control byte and the communication bridge comprises means for detecting back pressure from the at least one control byte.

30.The communication bridge according to claim 29 wherein the transport container includes a header, and a payload field and at least one control byte and the communication bridge comprises performing an error check on at least a first portion of the transport container from an error code stored in the at least one control byte.

31. The communication bridge according to claim 28, wherein the means for receiving the transport container includes a means for receiving a fame having a predefined number of transport containers.

32. The communication bridge according to claim 31, wherein each transport container includes a header, an error code field and a payload field and the means for receiving includes a means for checking an error code of at least a first portion of each transport container.

33. The communication bridge according to claim 32, the means for checking includes a means for detecting a marking in a predefined transport container of the frame of transport containers.

34. The communication bridge according to claim 28, wherein the means for receiving includes a means for checking a parity code on the frame from the parity code stored in a predefined transport container.

35. The communication bridge according to claim 28, wherein the frame being composed of N blocks of transport containers where N is a positive number with each block including M transport containers where M is a positive number and each transport container includes at least one control byte, and the means for receiving the transport containers includes a means for sequentially receiving a first transport container of a first block through a last transport container of a last block.

36. The communication bridge according to claim 35 wherein them means for receiving comprises a means for detecting a bit interleave parity code generated over Q transport containers of a group of N/P blocks where Q is a positive number less than M and P is a positive number.

37. The communication bridge according to claim 36, wherein P is equal to 1 and the means for detecting a bit interleave parity code generated over Q transport containers of a group of N/P blocks includes a means for detecting the generated bit interleave parity in the at least one control byte of the of the last transport container of the last block.

38. The communication bridge according to claim 33, wherein P is greater than 1, and where in the frame is partition into N/P equal sections of blocks and means for detecting includes a means for detecting the bit interleave parity in the at least one control byte of a last transport container of a first section of blocks.

39. The communication bridge according to claim 35, wherein the means for receiving includes a means for detecting communication information in the at least one control byte in a predefined transport container of each block.

40. The communication bridge according to claim 39, wherein the means for detecting communication information further comprises a means for detecting a parity code in the at least one control byte in a predefined transport container of each block.

41. The communication bridge according to claim 39, wherein the means for detecting communication information further comprises a means for detecting back pressure information in the at least one control byte in selected transport containers.

42. The communication bridge according to claim 41, wherein each block represents a sub-port with each sub-port being capable of connecting to a plurality of ports and preselected ones the plurality of bits in the at least one control byte being used to identify a port with back pressure, wherein the means for detecting communication information further comprises a means for detecting back pressure information in the at least one control byte in selected transport containers, the means for detecting pressure includes a means for detecting a first logic state of a bit identifying the port with back pressure.

43. The communication bridge according to claim 35, wherein each transport container includes an error code generated over at least a first portion having a bit width equal to the number off bits in the at least first portion of each transport container and the means for receiving the frame of transport containers further comprises means for establishing transport container synchronization from the error code.

44. The communication bridge according to claim 43, wherein the means for establishing transport container synchronization from the error code further includes a means for continually checking for a no error indication over a bit width equal to the bit width of the al least the first portion.

45. The communication bridge according to claim 44, wherein the means for receiving includes a means for receiving a plurality of frames and wherein the error code is a CRC polynomial code and each frame includes a synch transport container and means for receiving the plurality of frames further includes a means for establishing frame synchronization.

46. The communication bridge according to claim 45, wherein the error code in the synch transport container includes a combination of the CRC polynomial code and a coset of the CRC polynomial code and the means for establishing frame synchronization includes a means for checking the error codes in each transport container for a no error condition in the combination of the CRC polynomial code and the coset of the CRC polynomial code.